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In the latest note[13] GUIGNARD adds a considerable number of Rosaceae, of the tribes Pruneae and Spiraeae, whose leaves and other parts furnish hydrocyanic acid.—C. R. B.

Sexuality of the Uredineae.—In 1904 BLACKMAN[14] showed that a peculiar process of fertilization occurs in the aecidium of *Phragmidium violaceum*, by which a nucleus from a vegetative cell of the mycelium migrates into a fertile cell, and thus brings about the condition of paired nuclei found by SAPPIN-TROUFFY[15] to be quite universal in the teleutospore-bearing mycelium. Two questions naturally arise as a result of this work. First, since the aecidium of *P. violaceum* is of a special type, how far will this process of fertilization be found to explain the origin of conjugate nuclei in aecidia generally? Second, what process takes place in those forms which have no aecidium? Both of these questions BLACKMAN and FRASER[16] attempt to solve in a later contribution to the cytology of the Uredineae. In *Uromyces Poae* Raben. and *U. Poarum* Neil., both of which are *eu*-forms with typical aecidia, the migration of nuclei from one vegetative cell to another was observed in the tissue of the aecidium. These migrations were not so easily distinguished as in *P. violaceum*. In *Melampsora Rostrupi* Wagn., which has aecidia of the caeoma type, no fertilization was discovered, but there were some evidences that fertilization took place in the manner described by CHRISTMAN for *Phragmidium speciosum*. In *Puccinia Malvacearum* Mont., a *lepto*-form, the change from uninucleate to binucleate cells takes place in the hyphae of the teleutosorus, but the exact method could not be determined; neither could the transition be made out in the *micro*-forms *P. Adoxae*, D. C., *U. Scillarum* Wint., and *U. Ficariae* Lév.—H. HASSELBRING.

The filiform apparatus.—Striations on the micropylar portion of synergids were described in 1856 by SCHACHT, who called them "fertilization threads" (*Befruchtungsfaden*); HOFMEISTER gave the name "filiform apparatus" (*Fadenapparat*); STRASBURGER in 1882 believed the lines or threads consisted of fine pores. A paper by HABERMANN[17] now brings modern technic and modern lenses to bear upon the subject. The filiform apparatus, more or less developed, is characteristic of angiosperms generally. The apparatus arises by the transfor-

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[13] ———, Nouveaux exemples de Rosacées à acide cyanhydrique. Compt. Rend. Acad. Sci. Paris **143**:451. Oct. 1. 1906.

[14] BLACKMAN, V. H., On the fertilization, alternation of generations, and general cytology of the Uredineae. Annals of Botany **18**:323–373. *pls. 21–24.* 1904.

[15] SAPPIN-TROUFFY, P., Recherches histologiques sur la famille des Uredinées. Le Botaniste **5**: 59–244. *figs. 68.* 1896–7.

[16] BLACKMAN, V. H., and FRASER, MISS H. C. I., Further studies on the sexuality of the Uredinaceae. Annals of Botany **20**:35–48. *pls. 3–4.* 1906.

[17] HABERMANN, ALFRED, Der Fadenapparat in den Synergiden der Angiospermen. Beih. Bot. Centralb. **20**:300–317. *pl. 13.* 1906.

mation of the foam-like cytoplasm, its growth continues by apposition, and the upper portion often swells considerably before fertilization. The membrane of the embryo sac is resorbed over the apex of the synergids, which then quite frequently protrude. The vacuoles in the lower part of the synergids develop simultaneously with the filiform apparatus, and are separated from it by a plasma membrane. The filiform apparatus consists of cellulose, and its function seems to be the separation of the chemotactic glucose-containing substance, which passes into the micropyle and attracts the pollen tube. The name "synergid" is consequently quite appropriate.—CHARLES J. CHAMBERLAIN.

Moisture in seeds.—BROWN and DUVEL[18] have devised a method for the rapid determination of the percentage of moisture in grains. The method consists in heating a given weight of the grain in oil to drive off the water, which is condensed and measured in a graduated cylinder. The method is accurate, simple, and capable of great speed in application. The determinations are said to be accurate to 0.1 of 1 per cent., which makes it suitable for all scientific determinations. A determination can be made in twenty minutes, and with a number of compartments to the apparatus one trained manipulator with an ordinary assistant can make 200 determinations in a day. It is to be hoped that this will be one step toward putting grain-testing on a reliable basis. The economic improvement in the method of grading grain is seen when it is mentioned that the percentage of the European importation of corn that the United States furnishes has greatly diminished in the last decade, because of the great liability of our corn to spoil *en route*.—WM. CROCKER.

Centrosomes in angiosperms.—KOERNICKE[19] has reviewed the centrosome studies of the past seven years, paying particular attention to the work of BERNARD. Besides studying his old preparations and making new ones showing mitosis in the embryo sacs and pollen mother cells of various species of Lilium, KOERNICKE has made a thorough study of the division of the generative cell as it occurs in the pollen tube of Lilium, thinking that centrosomes might be retained longest by these structures which represent the ciliated sperms of some gymnosperms. No centrosomes were found, but on the contrary the fibers of the spindle were seen to end in the *Hautschicht*. It is of interest to note that while the generative cell is sharply outlined in the pollen grain, it loses its sharp contour after it passes into the pollen tube. After the generative nucleus divides, the two daughter nuclei lie free in the general cytoplasm of the pollen tube, there being no well-organized cells as figured by GUIGNARD and reproduced by current textbooks.—CHARLES J. CHAMBERLAIN.

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[18] BROWN, EDGAR, and DUVEL, J. W. T., A quick method for the determination of moisture in grain. U. S. Dept. Agric., Bureau Pl. Ind., Bull. 99. pp. 24. *figs.* 12. 1907.

[19] KOERNICKE, MAX, Zentrosomen bei Angiospermen. Flora **96**:501–522. *pl.* 5. 1906.